

of Dumont, the district referred to contains scarcely half that number.—Several mathematical notes are given, and there is a description of three additions to the synopsis of Calopterygines, by M. Longchamps.

SOCIETIES AND ACADEMIES

LONDON

Royal Society, March 12.—“Contributions to the Developmental History of the Mollusca, Sections I., II., III., IV.” By E. Ray Lankester, M.A., Fellow of Exeter College, Oxford. Communicated by G. Rolleston, F.R.S., Linacre Professor of Anatomy and Physiology in the University of Oxford.

The points of greatest interest to which the author draws attention in the present memoir are:—

1. The explanation of the basket-work structure of the surface of the ovarian egg, by the plication of the inner egg-capsule.
2. The increase of the yolk by the inception of cells proliferated from the inner egg-capsule.
3. The homogeneous condition of the egg at fertilisation.
4. The limitation of yolk-cleavage to the cleavage-patch.
5. The occurrence of independently-formed corpuscles (the autoplasts) which take part in the formation of the blastoderm.
6. The primitive eye-chamber formed by the rising up of an oval wall, and its growing together so as to form a roof to the chamber.
7. The origin of the otocysts by invagination.
8. The rhythmic contractility of a part of the wall of the yolk-sac.
9. The disappearance of the primitive mouth, and the development of a secondary mouth.
10. The development of a pair of large nerve-ganglia by invagination of the epiblast immediately below the primitive eye-chambers.

“The Localisation of Function in the Brain,” by David Ferrier, M.A., M.R.C.P., Professor of Forensic Medicine, King's College, London. Communicated by J. Burdon Sanderson, F.R.S., Professor of Practical Physiology in University College.

The chief contents of this paper are the results of an experimental investigation tending to prove that there is a localisation of function in special regions of the cerebral hemispheres.

Anthropological Institute, March 10.—Prof. George Busk, F.R.S., president, in the chair. A paper, by Dr. A. P. Reid, was read, “On the mixed or half-breed Races of North-Western Canada.” The mixed races were nine in number, viz. the progeny of (1) the Anglo-Saxon father and Indian mother, (2) the French and French-Canadian father and Indian mother, (3) the Anglo-Saxon father and mixed Anglo-Saxon and Indian mother, (4) the French father and mixed French and Indian mother, (5) the “half-breed” Anglo-Saxon and Indian as father and mother, (6) the “half-breed” French and Indian as father and mother, (7) the descendants proceeding from intermarriage of 5th class, (8) the descendants proceeding from intermarriage of 6th class, (9) the mixed or “half-breed” father and Indian mother. Those nine divisions included the principal mass of the mixed peoples of Manitoba. The French and Anglo-Saxons and their descendants rarely intermarried. The author pointed out the marked change in physique, which was common to all the classes he had enumerated, that quickly followed the removal of Europeans to American soil. The complexion becomes swarther and more nearly resembling the type of native Americans than one would suppose. That change was due to climatic influences, to different food, and to altered customs. On the whole, there was a tendency, in all the mixed races, to the Indian rather than to the European type. They could not be said to possess any objectionable peculiarities; they were not more inclined to the abuse of alcohol or to other irregularities than the pure whites; and it would be difficult to find a people who have fewer faults. Some of the families of the pure white and pure Indian were often very numerous, sometimes reaching the number of fifteen; but four to six was the average.—A paper, by the Rev. George Taplin was read, “On the mixed races of Australia and their migrations.” The author's deductions were made chiefly from linguistic data. He however recorded the fact of having met with some individuals of the Narrinyeri tribe who had light complexions and straight hair. He found also that among the Narrinyeri there were superstitions and customs identical, even in name, with those obtaining among the Samoans.—Commander Telfer, R.N., communicated notes on the discovery of burial

grounds near Tiflis in Georgia. In one of the graves were found parts of a body that had undoubtedly been interred in a sitting posture. The skull of an adult was remarkably distorted, and bore a striking resemblance to the longest form of the Titicacan skulls of South America.—A paper by Miss A. W. Buckland “On the Serpent, in connection with primitive metallurgy,” was also read.

Royal Horticultural Society, March 4.—General Meeting.—Lieut.-Gen. Hon. Sir A. H. Gordon, K.C.B., in the chair.—The Rev. M. J. Berkeley commented on some of the plants shown. They included *Encholirion corallinum*, a curious Bromeliaceous plant from Brazil, a fine species of *Medinilla* probably new, and the beautiful *Iris reticulata*, which, though a native of Persia, proved quite hardy in this country.

Scientific Committee.—Dr. Hooker, C.B., P.R.S., in the chair.—The Rev. M. J. Berkeley called attention to the following communication made by Prof. Panceri to the Institut Egyptien at its meeting on December 13, on Cryptogamic vegetation found within the egg of an ostrich, which was interesting in connection with what he had himself brought before the committee on March 5 and 19, 1873. The egg had been given Prof. Panceri at Cairo, and was still fresh, the air space having not even been formed. Hesoon, however, noticed the appearance of dark blotches within the shell, and having broken it open to ascertain the cause, he found that they were produced by the growth of minute fungi. Instances of a similar kind had already been studied by him, and he had communicated the results to the Botanical Congress held at Lugano in 1859. The Rev. M. J. Berkeley had found *Cladosporium herbarum* in the interior of a fowl's egg.—Dr. Masters brought shoots of *Picea nobilis*, in which the primary shoot was dead and swollen beneath the apex. In many instances he had found similar excrescences to contain the larva of an insect. In other cases the primary cause of injury appeared to be frost or cutting east winds.—Dr. Masters exhibited some peas which had been attacked by a beetle (*Bruchus pisi*) which fed on the cotyledonary portion, but left the plumule, so that the seeds still germinated.—Dr. Masters reported on the monstrous Cyclamen which had been referred to him at the last meeting. The apparent corolline whorl in the Primulaceæ is now regarded as an outgrowth from the androecium. In the present case there appeared to be a supplementary staminal whorl alternating with the normal one, and therefore with its members opposite to the sepals. These members, however, had become partially petaloid, and were rolled up, so that the whole flower had a superficial resemblance to a case of lateral proliferation.—Mr. Grote stated that Mr. F. Moore, of the Indian Museum, agrees with Prof. Westwood, and refers the Assam Tea-bug to the genus *Helopeltis* of the Capsidæ. A Ceylon species of this bug is figured by Signoret in the *Ann. Soc. Entom. de France*, 3rd series, pl. 12, fig. 2. Two other species are known from the Indian Archipelago. The Indian species described by Mr. Peal, differs from the Ceylon species in its habit of feeding on the juice of the tea-plant; and Mr. Moore proposes to call it *H. theivora*.—Prof. Thielson Dyer read the following extract from a letter from Mr. James Caldwell, Port Louis, Mauritius:—“I would especially call your attention to a case in which the ribbon cane has sported into a green cane and a red cane from the same head. I saw at least 200 instances of it in the same plantation, and the fact has completely upset all our preconceived ideas of the difference of colour being permanent. The conversion of a striped cane into a green cane was not uncommon, but the change into a red cane universally disbelieved, and that both events should occur in the same plant incredible. I find, however, in Fleischman's ‘Report on Sugar Cultivation in Louisiana for 1848,’ published by the American Patent Office, the circumstance mentioned, but he says he never saw it himself.”—In the report of the meeting for Feb. 11 (NATURE, vol. ix. p. 354) the word “gaby” in line 12 should be omitted.

Mathematical Society, March 12.—Dr. Hirst, F.R.S., president, in the chair.—The following papers were read:—On certain constructions for bicircular quantics, and On a geometrical interpretation of the equations obtained by equating to zero the resultant and the discriminant of two binary quantics, by Prof. Cayley.—On the Cartesian equation of the circle which cuts three given circles at given angles, by J. Griffiths.—On another system of poristic equations, by Prof. Wolstenholme.

EDINBURGH

Royal Physical Society, Feb. 25.—Dr. John Alex. Smith, president, in the chair.—On a New Mode of Esti-

inating the Amount of Colour in Water, by Mr. J. Falconer King. Mr. King's process consists in adding to chemically pure water a standard coloured solution contained in an accurately graduated instrument until the pure water equals in colour the specimen of water under examination. The result of an estimation of colour in a water can thus be accurately recorded and preserved for future reference.—Occurrence of the Deal Fish (*Trachypterus arcticus*), near Montrose, by James C. Howden, M.D., Sunnyside.—Notes of the American Bittern (*Bolaurus lentiginosus*), and some other of our rarer birds recently shot in the South of Scotland, by John Alex. Smith, M.D.—Note on a New Fossil from the Silurian Rocks in the Pentland Hills, by Mr. D. J. Brown. Mr. Brown described a section through the rocks in which the fossil occurred. The fossil he believed to be a seaweed, of which it appeared to be a frond. This is the third specimen of seaweed that has been found in these rocks.—Note on Bryozoa, from the carboniferous limestone at Longniddry Station, by Mr. D. J. Brown. Mr. Brown exhibited a fine series of Bryozoa from the lower carboniferous limestone group of Longniddry quarry, Haddingtonshire. This series of Bryozoa consisted principally of fragments of the genera *Fenestrella* and *Polypora*, the whole facies being eminently that of the carboniferous limestone, although amongst them was one fragment apparently referable to the Permian genus *Thamnisus*.—On some Peculiarities in the Geographical Distribution of the Mammalia of Greenland, as explanatory of the origin of the flora and fauna of that country, by Dr. Robert Brown, secretary. Dr. Brown considered that a great portion of the Greenland fauna and the bulk of its flora had been derived from Europe when Greenland was united, probably during or shortly after the time the Miocene beds were laid down to the European continent, by continuous land or a chain of islands, of which it is possible that Iceland, Bear Island, and perhaps even the Orkneys and Shetlands, are only fragments.

MANCHESTER

Literary and Philosophical Society, Feb. 24.—Rev. William Gaskell, vice-president, in the chair.—On the Effect of Acid on the Interior of Iron Wire, by Prof. Osborne Reynolds. It will be remembered that at a previous meeting of this Society Mr. Johnson exhibited some iron and steel wire in which he had observed some very singular effects produced by the action of sulphuric acid. In the first place the nature of the wire was changed in a marked manner, for although it was soft charcoal wire it had become short and brittle; the weight of the wire was increased; and what was the most remarkable effect of all was that when the wire was broken and the face of the fracture wetted with the mouth it frothed up as if the water had acted as a powerful acid. These effects, however, all passed off if the wire were allowed to remain exposed to the air for some days, and if it were warmed before the fire they passed off in a few hours. Prof. Reynolds subjected one of the pieces of wire to a farther examination, and from the result of that examination was led to what appears to be a complete explanation of the phenomena. He was led, from certain observations, to conclude that the effect was due to hydrogen, and not to acid, as Mr. Johnson appeared to think, having entered into combination with the iron during its immersion in the acid, which hydrogen gradually passed off when the iron was exposed. This conclusion he tested and proved to be correct by further experiments. The question appears to the author one of very considerable importance, both philosophically and in connection with the use of iron in the construction of ships and boilers. If, as is probable, the saturation of iron with hydrogen takes place whenever oxidation goes on in water, then the iron of boilers and ships may at times be changed in character and rendered brittle in the same manner as Mr. Johnson's wire, and this, whether it can be prevented or not, is at least an important point to know, and would repay a further investigation of the subject.—Dr. Ransome demonstrated the movements of the chest in respiration, showing the remarkable mobility of its several parts, and the consequent facility with which its cavity can be inflated.

BALTIMORE

Maryland Academy of Sciences, Feb. 2.—A paper was read from Prof. D. S. Martin upon the economical resources of Cornwall, embracing one of the most remarkable deposits of iron ore in America, and forming three large banks. Reference was made in the paper to the immense development of the magnetic oxide of iron in these mines, and to the fact that some of the

ore exhibits marked magnetic polarity (native lode-stone). The yield is 175,000 tons annually, but the capacity is double. The minerals of unusual interest found here, with the magnetite, are lodestones and coatings of cuprite, chrysocolla, azurite, malachite, and brochantite, the last named being found in no other locality in Eastern North America.

PARIS

Academy of Sciences, March 9.—M. Bertrand in the chair.—M. H. Resal communicated a paper on the theory of the "ground swell" (*houle*).—On a new spiral regulating chronometers and watches, by M. Phillips. The results of experiments made to test the isochronism of chronometers provided with the new spiral.—Researches on crystalline dissociation; estimation and division of the work done in saline solutions, by MM. P. A. Favre and C. A. Valson. A continuation of former communications on this subject.—On a particular arrangement of micrometer with movable wires proposed for the telescopes to be used for the observation of the Transit of Venus, by M. Ph. Hatt. Communicated by M. Fizeau.—New note on waves of variable height and velocity, by M. L. E. Bertin.—On the dispersion of gases, by M. Mascart. The author has determined the dispersion of air, nitrogen, hydrogen, N_2O , CO , CO_2 , and CN . The dispersion of these gases bears no direct relation to their refractive power nor to their density.—On the wave-lengths and characters of the violet and ultra-violet rays of the solar spectrum, given by a photograph taken by means of a diffraction grating, by M. H. Draper. An abstract of this paper and the accompanying Albertype print have already appeared in this journal.—Note on hydrogenised palladium, by MM. L. Troost and P. Hautefeuille. By studying the tension of the gas in the metal at various temperatures the authors come to the conclusion that hydrogenised palladium is a definite compound of hydrogen and palladium with an excess of hydrogen dissolved in it. The tension of the hydrogen is constant from the time the amount of contained gas is equal to 600 volumes; this amount corresponding to the formula Pa_2H . The authors announce a future communication on hydrides of potassium and sodium (K_2H and Na_2H). No allusion is made to the results recently obtained by Wright and Roberts by the determination of the specific heat of hydrogenised palladium.—New apparatus for determining the tannin contained in the different astringent materials employed in tanning, by M. A. Terreil. The process used depends upon the absorption of oxygen by tannin in presence of alkaline liquids.—Organogenesis compared with androgenesis in its relations with natural affinities (Classes *Selaginaceae* and *Verbenaceae*), by M. A. Chatin.—Reply to a reclamation of priority of M. Béchamp, by M. P. Schutzenberger.—Probable character of the first fortnight of March, by M. de Tastes. A weather prognostication.—Researches on the origin of the lithological elements of the tertiary and quaternary soils of the neighbourhood of Oran, by M. Daubrée. The author concludes from his researches that the Middle Tertiary epoch was especially an age of eruptions of a trachytic nature. M. A. Nordenskiöld presented to the Academy some photographs taken in Spitzbergen in 1872–73. Among the photographs was one of the largest known mass of meteoric iron. It was discovered in Greenland (Ovifak) in 1870. This mass weighs 21,000 kilogrs. and is about to be brought to Stockholm for the Royal Museum.

CONTENTS

	PAGE
THE CHEMICAL SOCIETY'S JOURNAL	377
TODHUNTER'S "MATHEMATICAL THEORIES OF ATTRACTION," I. By R. TUCKER	378
OUR BOOK SHELF	380
LETTERS TO THE EDITOR:—	
Animal Locomotion.—His Grace the DUKE OF ARGYLL; J. WARD; A. H. GARROD	381
The Moon's Want of Atmosphere.—A. H. GARROD	382
On Volcanic Eruptions.—J. M. WILSON	382
Remarks on Ozone	382
The Limits of the Gulf-stream.—T. A. HULL	383
The Great Ice-Age.—J. J. MURPHY	383
Mats.—E. B. KNOBEL	383
POLARISATION OF LIGHT, VI. By W. SPOTTISWOODE, Treas. R.S. (With Illustrations)	383
A NEW THERMOMETER (With Illustration)	387
ON SOME RECENT ASTRONOMICAL SPECULATIONS IN THEIR RELATION TO GEOLOGY	388
THE CHALLENGER EXPEDITION, II.	388
NOTES	389
THE GASEOUS, LIQUID, AND SOLID STATES OF WATER-SUBSTANCE. By Prof. J. THOMSON, LL.D. (With Diagram)	392
SCIENTIFIC SERIALS	394
SOCIETIES AND ACADEMIES	395